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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,720	01/24/2002	Tomoki Kobayashi	IIW-016	2117 <b>3</b>
959	7590	10/30/2003	EXAMINER	
LAHIVE & COCKFIELD 28 STATE STREET BOSTON, MA 02109			TSANG FOSTER, SUSY N	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 10/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

10/056,720

Applicant(s)

KOBAYASHI ET AL.

Examiner

Susy N Tsang-Foster

Art Unit

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-- Th MAILING DATE of this communication appears on the cover sheet with the corresponding address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, 15, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 13, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Drawings*

2. The drawings are objected to because spelling errors are present in the Figures. For example, in Figure 3, "elapae" should be "elapse". In Figure 9, "shutt" should be "shut". In Figure 12, "waming" should be "warming". The Examiner kindly requests applicant to review the Figures for spelling errors. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

3. The abstract of the disclosure is objected to because the abbreviation MH has not been defined in the specification. Correction is required. See MPEP § 608.01(b).
4. The disclosure is objected to because of the following informalities:  
Throughout the specification, the word "principle" is misspelled as "principal".  
Throughout the specification, the abbreviation "MH" has not been defined at least once in the disclosure and it is unclear to the Examiner what this symbol stands for.

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The specification is replete with spelling errors. The Examiner kindly requests applicants to review the entire specification and correct the typographical errors.

On page 1, in the first paragraph, the phrase “for starting the fuel cell remaining cold” is grammatically awkward.

On page 1, second paragraph, the phrase “fuel cell electric vehicle (hereinafter abbreviated as “FCEV”) has drawn attracted” is grammatically awkward. It is recommended to substitute “attraction” for “attracted”.

On page 18, line 2, “shut-off valve 31” should be “shut-off valve 32”.

On page 20, line 21, “MK tank 31” should be “MH tank 31”.

On page 25, line 25, “shut-off” is misspelled.

On page 29, the abbreviations PIM and PMW have not been defined in the specification.

On page 31, line 1, “colluded” should be “occluded”.

On page 34, first paragraph, “MK” should be “MH”.

On page 37, the “sifted” should be “shifted”.

On page 38, “tree” should be “three”.

On page 38, “tertiary shut-off valve 32” should be “tertiary shut-off valve 33”.

On page 39, “NH” should be “MH”.

On page 43, “tree” should be “three”.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the limitation “high-pressure tank” is indefinite because it is unclear what range of pressure encompasses a “high-pressure tank”.

In claim 9, the limitation “a step for transmitting the heat generated at the time of storing the hydrogen in the hydrogen-occlusion alloy” is indefinite because it is unclear to where the heat is being transmitted.

Claims depending from claims rejected under 35 USC 112, second paragraph are also rejected for the same.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 4, 5, 8-10, 12, 15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by the JPO English abstract for JP 60-68 A.

The JPO English abstract for JP 60-68 A discloses a fuel cell apparatus comprising a fuel cell 15, a metal hydride 13 having a high hydrogen equilibrium dissociation pressure placed in tank 4 and a metal hydride 14 having a low hydrogen equilibrium dissociation pressure in tank 10 and the two tanks are coupled to each other through hydrogen transfer valves 11 and 12 (see also Figure 2). A heat exchanger 18 is contained in tank 10 and is coupled with a heat exchanger 16 which heats and cools the fuel cell 15.

9. Claim 9 is rejected under 35 U.S.C. 102(a) as being anticipated by the IPDL JPO Machine Translation for JP 2001-213605 A.

The IPDL JPO Machine Translation for JP 2001-213605 A discloses a process of starting up a fuel cell by storing hydrogen in a metal alloy MH2 and using heat generated by storing hydrogen in metal alloy MH3 supplied from a hydrogen tank to desorb the hydrogen from the metal alloy MH2 to use for power generation of the fuel cell during startup (see paragraphs 4, 5 and 11-15 of the machine translation and Figure 1). The fuel cell would warm up during this start-up process since power is being generated.

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10. Claims 1, 4, 5, 8-12, 14, 15, 18, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kelley et al. (6,586,124 B2).

Kelley et al. disclose a warming up apparatus for a fuel cell comprising a first hydrogen occlusion alloy tank for storing hydrogen and a second hydrogen occlusion alloy tank having a hydrogen occlusion alloy accommodated therein and where the pressure in the first hydrogen occlusion alloy tank is higher than the pressure in the second hydrogen occlusion alloy tank (see Figures 6 and 7 and col. 5, line 44 to col. 6, line 7). At startup, when all the components of the fuel cell and warming up apparatus for the fuel cell are at about the same temperature, the valve (the hydrogen transferring means) between the two tanks are opened and the hydrogen from the first tank flows in the second tank and hydrogen from the first tank may optionally flow into the fuel cell (see col. 5, line 4 to col. 6, line 7). The hydrogen moving to the second hydrogen tank is absorbed by the metal hydride in the second tank in an exothermic reaction and some or all of the heat is transferred to the fuel cell which is in thermal contact (heat transmitting means) with the second hydrogen tank (see col. 5, line 4 to col. 6, line 7). In a similar embodiment, once the temperature of the fuel cell reaches a predetermined set point, a control component 650 shuts off the flow of hydrogen from the first hydrogen tank to the second hydrogen tank and allows hydrogen to flow into the fuel cell from the first hydrogen tank 620 (see col. 5, lines 4-43). When the temperature of the fuel cell reaches above the dissociation temperature of hydride media in the second hydrogen tank, the hydrogen evolved from the hydride can be used by the fuel cell (see col. 5, lines 4-43).

*Allowable Subject Matter*

11. Claims 13, 16, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The IPDL JPO Machine Translation for JP 09-73912 A discloses catalyzed combustion to heat a hydrogen storing metal alloy tank in a short time by applying the exhaust from the catalyzed combustion machine to the front face of a hydrogen storing metal alloy tank and consequently hydrogen gas supply in the fuel cell during starting can be performed efficiently and shortening of warm up time (see paragraph 8 of machine translation).

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Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Friday from 9:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.



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The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

st/ 

Susy Tsang-Foster  
Primary Examiner  
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